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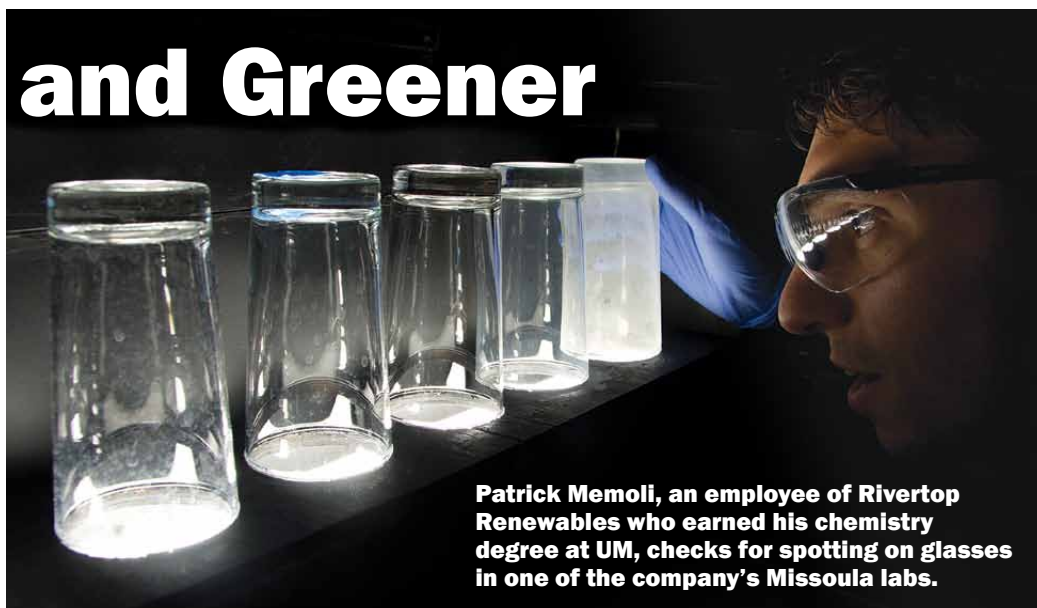
RESEARCH VIEW

Summer
2014

UNIVERSITY OF MONTANA Research, Innovation & Imagination

Cleaner and Greener

The University's most successful spinoff company lands \$26 million investment



Patrick Memoli, an employee of Rivertop Renewables who earned his chemistry degree at UM, checks for spotting on glasses in one of the company's Missoula labs.

A year after graduating from the University of Montana with a bachelor's degree in chemistry, Patrick Memoli can say without shame that he is employed as a dishwasher. On a recent Thursday morning, he's hard at work in the bowels of a building at the eastern edge of Missoula, loading dirty plates into the yawning mouths of 10 automatic dishwashing machines.

It's quickly apparent, however, that Memoli isn't your ordinary dishwasher. He's wearing a smart white lab coat, safety glasses and purple latex gloves. He's also dirtying the plates himself, smearing them with a goopy mixture of butter and milk powder before loading them into each dishwasher along with six clean glasses and a single aluminum disc. He sets the cycles, and then inspects and records the results, noting the cleanliness of the plates, the spotting of the glasses and the corrosion of the aluminum disc. Memoli clearly is more bench scientist than kitchen hand.

"Some of the guys call it hydro-ceramic chemistry," he says with a smile.

Whatever it's called, it's a growth industry. Memoli's employer, UM spinoff

Rivertop Renewables, just landed a \$26 million investment from First Green Partners, a venture capital firm, and Cargill, the largest privately held company in the country. The investment — the biggest in history for any UM-related business — is the reason Rivertop CEO Mike Knauf has a bottle of champagne sitting on his desk. It's a congratulatory gift from a UM professor.

"It's a big deal for anyone in our industry," Knauf says of the money. Venture capital, he explains, tends to be wary of the green sector. Knauf received at least 20 rejections from venture capitalists before First Green Partners and Cargill announced their investment. With the money, Rivertop will double its workforce from 20 to 40 employees, open

a pilot facility in Missoula and develop a large-scale production facility in Virginia. But what could get a venture capital firm and a giant agricultural company excited about a little startup in Missoula?

The answer is a chemical called glucaric acid, which Rivertop derives from corn syrup by way of a unique, highly efficient process developed and patented by UM chemistry Professor Emeritus Don Kiely. Glucaric acid is cheaply produced and completely biodegradable. It also does a number on dirty dishes. Large chemical companies have been searching for a viable alternative to phosphates after they were banned in several states for the risk they pose to waterways. Knauf thinks glucaric acid is the alternative that the industry has been looking for, and he aims to take Rivertop into the dishwashing sector by selling the chemical to larger companies to use as a builder in detergents.

"We're putting a novel chemical into their toolbox that they can innovate around," he says. "We're creating value through innovation."

Rivertop — continued page 6

\$45 Million: UM Earns Largest Research Award in University's History

UM has received a \$45 million cooperative agreement award from the U.S. Army Corps of Engineers, the agency announced May 16. The five-year research award is the largest in the history of UM.

Under the agreement, UM will help the Corps study and solve environmental and cultural resource problems across the nation. The University also will assist the Corps in implementing land and water ecological restoration, maintenance and training for optimal management of public resources.

F. Richard "Ric" Hauer is a UM professor of freshwater science and systems ecology and directs the UM side of the Institute on Ecosystems, a statewide institute of the Montana University System. He will serve as program director and principal investigator of the cooperative agreement.

"Earning this award confirms that UM has become an elite research institution in the arena of ecology and environmental sciences," Hauer says. "This will take our research enterprise to an even higher and exciting new level."

The award confirms UM's ecological and cultural research status, says **Scott Whittenburg**, UM vice president for research and creative scholarship. "When you look at a map of the United States and identify all the lead institutions doing environmental research, there should be a star next to Missoula and (UM)."

During the past two decades, UM has become a world leader in conservation



UM researcher and Professor Ric Hauer announces the cooperative agreement with the U.S. Army Corps of Engineers during a May 16 news conference near Main Hall.

biology, ecology and ecosystem science, Hauer says.

"We are, without doubt, competitive with and even surpassing many of the largest and most prestigious universities in the nation in the area of ecological and cultural research," Hauer says. "Our faculty members are among the best in the nation, indeed the world. I know our researchers demand the highest level of excellence of themselves and each other."

Hauer has a long-standing relationship with the Corps, assisting the agency with many projects since 1992. He helped the Corps develop the nationwide methodology and protocols for ecological assessments of rivers and wetlands. He also has taught classes for agency personnel on stream ecology and large-

river ecosystems for the past 18 years.

Hauer says the work envisioned in the cooperative agreement may include topics such as the ecological effects of dams and reservoirs, environmental management problems, endangered species such as paddlefish or sturgeon, invasive species such as spotted knapweed or zebra mussels, water-quality issues, abandoned mine waste, Native American cultural sites, human health in the environment, and environmental policy and law.

"We have outstanding faculty members and state-of-the-art technology here at the University of Montana," UM President Royce Engstrom says, "and it will be exciting to see how this significant award energizes and transforms our institution."

Religious Studies Professor Recipient of Two Prestigious Fellowships

Nathaniel Levtow has had an exciting semester. The UM religious studies professor is the recipient of a Berlin Prize from the American Academy in Berlin and a National Endowment for the Humanities Fellowship.

Established in 1994, the Berlin Prize is awarded each year to scholars, writers, policymakers and artists who represent the highest standard of excellence in their fields. Levtow will spend a semester conducting research at the American Academy in Berlin, where he will have the opportunity to engage in dialogue with American and German academic, corporate, cultural and political leaders.

The American Academy in Berlin has been described as the world's most

important center for American intellectual life outside the United States.

"It will be an honor to represent UM at the American Academy in Berlin," says Levtow, who is one of only 13 American Fellows attending the academy this fall and the first-ever Fellow from Montana. "Now I'll finally have the chance to see and work in the great German universities and cultural institutions that gave birth to my field of modern biblical and religious studies."

The NEH fellowship represents an equally unique opportunity of an entirely different kind. Unlike the Berlin Prize, it is not linked to any single university or city. Rather, it gives scholars the chance to follow their research wherever it may take

them, allowing Levtow to conduct research in the great libraries and antiquities museums of America, Europe and the Middle East.

"The NEH fellowship gives scholars the means to conduct difficult, important humanities scholarship and to communicate the necessity and value of humanities research in America today," Levtow says.



Levtow

Influential Dean to Retire

Do what has to be done. Be tough, but fair. Know where to draw the line. Finish what you start.

Such cowboy ethics inspired the UM tenure of **Dave Forbes**, dean of the College of Health Professions and Biomedical Sciences. Now after 26 years of accomplishment, Forbes plans to ride off into retirement on June 30.



Forbes

"The best part of the job was being able to build stuff — being able to grow," he says. "The key was finding the best people to come here. But to do that you need good space and a good working environment. If you can put that all together, you get a winning operation."

A Wisconsin native with a doctorate in pharmacy administration, Forbes spent 15 years at North Dakota State University before being hired as UM pharmacy dean in 1988. He inherited a fading program in danger of losing its accreditation.

Soon after he arrived, the program was placed on published probation, a move intended to warn away prospective students.

Familiar with rural-state politics, Forbes was turned loose to visit UM-trained pharmacists across Montana, warning them that the program that trained them was in jeopardy. With pharmacists helping lobby their representatives, the 1991 Legislature supplied the resources to meet the program's accreditation needs and hire more faculty.

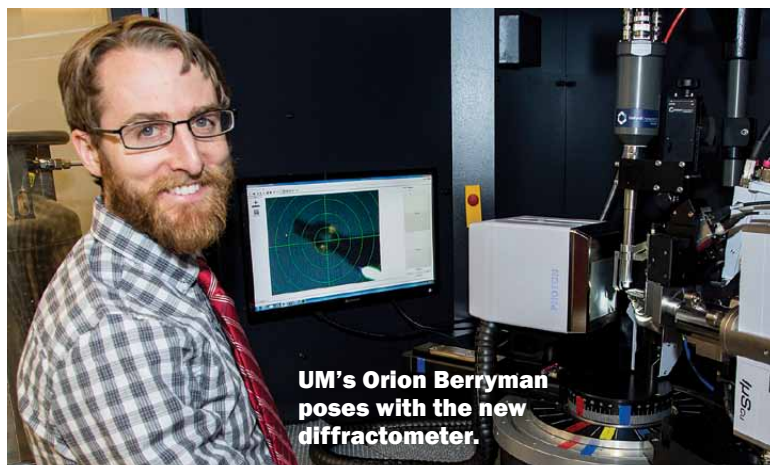
Next up was improved working space. In the '80s, pharmacy shared a small building with psychology and also had space in the Chemistry-Pharmacy Building. Administrators decided to ask L.S. Skaggs and his ALSAM Foundation for assistance, as the philanthropist had helped pharmacy programs in other western states. A month after a letter was sent, Skaggs flew out to visit UM in his private jet.

"We should have been shot, because our initial vision wasn't broad enough," Forbes says in his straightforward way. "We thought he might help us renovate our space in Chem-Pharmacy, but he said, 'I'm not messing with a historic building. Why don't you build a new building?'"

What followed was a flurry of schematics, lobbying the Legislature and private fundraising. Forbes has many stories of how everything almost collapsed, but the upshot is that in 1999 the new Skaggs Building rose on campus. A significant addition was completed in 2007.

During Forbes' tenure, the total square footage available for pharmacy and its affiliated programs grew 220 percent. The annual pharmacy student class grew from 30 to 65. Research dollars skyrocketed, with UM ranked as high as fifth nationally for National Institutes of Health funding. Science centers were added, pharmacy and physical therapy doctorates were offered, social work joined the fold, a public health program was offered online, and units were restructured and renamed.

"Basically we expanded in all areas, both in quantity and quality," Forbes says. "I had a lot of help, but, yeah, this has been a good place for me. Now it's time to spend more time golfing and on horses."



UM's Orion Berryman poses with the new diffractometer.

Powerful New Instrument Analyzes Crystals

Scientists and students studying at the subnanometer level can rejoice: UM has purchased a single-crystal X-ray diffractometer valued at \$515,000.

The device is the only small-molecule diffractometer in Montana and this part of the Rocky Mountain West.

"This is a state-of-the-art instrument," says **Orion Berryman**, a UM assistant professor of chemistry. "We are really excited to have it here."

The device was installed the last week of January in the basement of UM's Interdisciplinary Science Building.

Berryman says the diffractometer measures tiny crystal samples to determine composition at atomic resolution. This tells scientists

what the crystals are made of and how the atoms are arranged. The device produces 3-D maps that illustrate the locations and composition of atoms within the sample.

He says the new instrument has a lot of capabilities because it has two X-ray sources that produce X-rays with different wavelengths. This makes the device capable of handling both large crystals or small samples that don't diffract well.

He wants to spread the word that the device now is available to chemists, geoscientists, pharmacy researchers, biologists and others.

"This is intended to be an intercollegiate instrument," Berryman says. "We hope to have students from UM, Montana State and elsewhere using it."

Neural Injury Center Approved for UM

The Montana Board of Regents on March 7 approved a proposal by UM to open the Neural Injury Center, empowering students with traumatic brain injuries and other neural injuries to access support and services from departments and colleges across campus.

The NIC is not a physical space as yet, but rather a collaborative of expertise on campus and an extension of UM's ongoing, interdisciplinary Brain Initiative. Faculty members and researchers from the College of Health Professions and Biomedical Sciences, College of Visual and Performing Arts, Phyllis J. Washington College of Education and Human Sciences, and College of Humanities and Sciences are working together to approach neural injuries holistically.

"Our first initiative is to improve student success, but far more importantly it's about improving the quality of their lives and the lives of their families," says **Reed Humphrey**, UM professor and chair of the UM School of Physical Therapy and Rehabilitation Science. He says reaching the veteran community is especially important for the NIC because veterans make up a significant portion of students who have suffered unique brain injuries. ▀



Defender of Dreams

New therapy may help traumatized children conquer nightmares

Nightmares play a powerful role in popular culture for obvious reasons. Bad dreams embody some of our greatest fears and, under the spell of sleep, we often feel like we don't have control over them. All that fear and anxiety makes for interesting television and movie plotlines — it's exactly why the "Nightmare on Elm Street" franchise is so popular, for instance.

But in real life, for people with post-traumatic stress disorder, frequent nightmares can take a serious toll. In her 2009 book "Treating Post-Trauma Nightmares: A Cognitive Behavioral Approach," clinical psychologist Joanne Davis of the University of Tulsa writes, "Initiated or exacerbated by a traumatic event, these nighttime horrors may have a haunting impact on the dreamer, affecting not only the quality and quantity of sleep the individual experiences, but also the cognitive, emotional, behavioral and physiological functioning of the individual during the day."

In other words, a severe case of nightmares can turn into one giant living nightmare.

Cameo Stanick, a former student of

Davis' and a UM assistant professor of psychology, has spearheaded a study that could help extinguish chronic nightmares for children. The treatment, based on some of Davis' work with adults, focuses on "rescription," in which kids between ages 8 and 13 learn how to rewrite their dreams with a positive spin.

The study is small-scale and in its beginning stages, but the results have been promising. It's being run simultaneously with another study at TU conducted by Lisa Cromer. Stanick and Cromer hope to use the pilot data they gather to launch an expanded, federally funded trial that could benefit multitudes of kids with trauma-induced sleep problems.

Stanick's journey into nightmare treatment began when she was a graduate student at TU. Davis, her adviser, had been working as an intern at the University of South Carolina National Crime Victims Center, and she was treating a 16-year-old client for PTSD. They were wrapping up the treatment that had been effective for her other PTSD symptoms when the young woman explained that she was still having

UM psychology researcher Cameo Stanick studies a new therapy for kids exposed to trauma that switches their worst nightmares to more positive outcomes.

nightmares that greatly affected her sleep.

"So Joanne, being a scientist-practitioner, started reviewing the literature that was available at that time on treatments," Stanick says. "She pieced together what eventually became the adult version of this treatment."

After Davis published her case study, Stanick helped her conduct trials, using the prescription technique with everyone from war veterans to survivors of domestic violence and childhood abuse. The therapy went through three randomized control trials and some quasi-experimental trials before Davis published "Treating Post-Trauma Nightmares," which has been well-received in the psychology field.

One of Stanick's colleagues, Shantel Fernandez, developed the children's version of the therapy for her dissertation and published a case series, and Stanick and Cromer are applying it in their studies.

The treatment requires children and families to meet with with a clinician from Stanick's research team for a mere five sessions, during which time the kids and their caregivers address their sleep patterns, learn relaxation techniques and, finally, the kids tackle their most

them rate their feelings on a fear meter or "scary scale." All these techniques and preparations lead up to the fourth week, in which the kids finally address their biggest nightmares.

"The main mechanism of the treatment is taking the original nightmare and keeping it basically the same with the exception of changing one major part of it so that the outcome is different and more positive," Stanick says. "If they felt powerless in the original nightmare, then whatever has changed in the rescription

see their nightmare frequency go down or the distress go down. For the kids we've treated so far, the nightmares go away entirely."

One of the kids, a school-age boy, was so sleep-deprived that he nodded off during the sessions. He was having trouble in school and at home, and his extreme exhaustion led to him to act out and not focus on anything. After Stanick taught him relaxation and sleep techniques, she had him rewrite a part of one of his nightmares. And so in his new version of the dream, Gandalf the wizard from "The Lord of the Rings" shows up and saves him.

After that, Stanick says, the boy's nightmare no longer had such a grip on him, and it eventually disappeared altogether. Though alleviating the nightmare was the primary goal, the ripple effect into the boy's daily life was equally impressive.

"He'd been through multiple sleep studies and had been treated for a variety of things, but after this treatment he looked like a different kid, physically," Stanick says. "He's listening better, his schoolwork is better, and he's not needing as much supervision at school."

Stanick says the boy has even helped another child with nightmares. "He thinks of himself as a dream ambassador now," she says, smiling. "He calls himself a defender of dreams."

Right now, Stanick has funding for 60 kids, but it hasn't been easy to find them.

"It's not exactly been a windfall," she says. "There are a lot of myths and beliefs that people, including clinicians, develop around trauma. They worry that asking kids about trauma is going to re-traumatize them."

A recent large-scale study has debunked that idea, showing that children and adults who go through PTSD treatments tend to come out of the experience without regret. What makes Stanick's treatment so interesting is that it doesn't delve into the trauma itself. Instead, nightmares become the entryway to healing. By adding a plot twist to their dreams, kids get to be in control — even if it's in their own imagination and inspired by a fantasy book. And that small slice of control can be life changing.

"It doesn't seem to matter how realistic or not realistic the rescription is," Stanick says. "Nightmares and dreams often have aspects that aren't realistic. At the end of the day, what matters is that it's empowering them." ■

If you have a child age 8 to 13 who may be struggling with nightmares and sleep disturbance, call Stanick's lab at 406-243-6684.

— By Erika Fredrickson



vivid nightmares with a simple rewrite. Addressing general sleep issues is important, Stanick says.

"When there are stresses related to sleep, families start to develop bad habits pretty quickly," Stanick says. "We actually know that when people avoid sleep by engaging in negative habits — drinking caffeine, watching TV, getting up and doing things at night to prevent sleep because they're afraid of the nightmares — that increases the stress. That increases the daytime sleepiness and actually sets them up for an increasing likelihood that they'll have nightmares. It becomes a vicious cycle really quickly."

Throughout the treatment, Stanick monitors the child's progress by having

puts them in a powerful position. They take that rescripted nightmare and re-read it before bed every night for that week."

When the child returns to Stanick, they discuss how the rescription impacted their dreams. They review more relaxation techniques and talk about how to maintain the healthy sleep habits they have begun to develop. At that point the treatment is over, though the child is asked to return for a few post-treatment sessions during the next six months.

"So far it's been as good as what we've seen in the adult trials, which is kind of amazing for such a short treatment," Stanick says. "Sometimes people dream the rescripted nightmare; sometimes they



These metal washers were coated with road salt. The rings on the right were treated with Rivertop Renewables' Headwaters corrosion inhibitor.

Rivertop — continued from front

Rivertop Vice President for Research and Development Tyler Smith thrives on that sense of innovation. Ten years ago, Smith was a grad student in Austin, Texas, doing drudge work in pharmaceutical labs. He was growing bored with chemistry. "I don't like measuring stuff so much," he says. "I like making stuff."

On a cross-country trip, he happened to stop by UM and took a look at the chemistry program. He saw professors exploring exciting new areas of sustainable chemistry with real-world applications, from biodegradable plastics to removing heavy metals from rivers. Chief among them was Don Kiely. "He was an absent-minded professor," Smith recalls. "He wanted to create something new and change the world by doing it." SuffICIENTLY enthralled, Smith entered UM's Ph.D. program and worked in Kiely's lab. Eventually he and a handful of other people helped Kiely spin the process into a business.

A decade later, Smith is encouraged by Rivertop's momentum. The \$26 million will enable the company to produce 10 million pounds of product in a year. So far, glucaric acid has two major applications: dishwashing detergent and corrosion reduction. Rivertop has supplied the Montana Department of Transportation for three years with a renewable product added to the salt brine they spray on roadways to keep them ice-free in winter. Salt water can quickly corrode bridge railings, cars and guardrails, but a little of the company's Headwaters corrosion inhibitor mixed in reduces corrosion by 75 percent. Rivertop supplied the state with enough of the chemical to treat 4.5 million gallons of salt brine this winter alone. What's more, it's completely safe.

"There aren't a lot of chemicals you can

go out and spray on roads and feel good about it," Smith says.

But the golden goose for Rivertop is glucaric acid's applications to dishwashing. Technicians like Memoli are busily accumulating data that supports the efficacy of glucaric acid against ingredients in leading brands of detergents. Rivertop's recent financial windfall is, in part, validation for the gleaming glasses and clean plates coming out of their test kitchen. The 10 dishwashers, which include five high-end Whirlpools and five cheap "landlord-specials," each are plumbed to a tank of water that is twice as hard as Missoula's groundwater. The idea is to simulate the toughest dishwashing conditions. Memoli and other technicians compare glucaric acid to leading brands of detergent — everything from Cascade Platinum (the BMW of dishwashing detergents), to more eco-branded detergents like Seventh Generation.

Smith points out the results in a darkened closet where glasses sit upturned on a light box. White spots and a blue-grey film are evident in almost all of them. But the glasses that have gone through a dishwasher loaded with glucaric acid are crystal clear. Rivertop plans to take these results to detergent manufacturers to show them that a renewable, biodegradable chemical

made from corn syrup can get dishes cleaner, and greener, than anything else.

For Joe Fanguy, director of technology transfer at UM, Rivertop's success is emblematic of the way federal research can lead to inventions, which can lead to new businesses and jobs for the community.

"I think it's our first potential big win," he says. "It's quite an encouraging story. It has broad, long-term implications for the community and the University."

In the past few years, Fanguy says he's seen more and more people come into his office with actionable business ideas. There's a spirit of innovation and entrepreneurship on campus, he says, that is boosted by the growth of companies like Rivertop.

"I think the tide is starting to change," he says. "People like Don Kiely should get a lot of credit for sticking their neck out and trying something."

Thanks to Kiely's leap of faith, and some support from UM, Missoula now has a burgeoning business that is employing Montana University System graduates — people like Patrick Memoli, who is one of the most highly qualified dishwashers in town. ▣

— By Jacob Baynham



Tyler Smith, a UM graduate and Rivertop vice president for research and development, inspects a glass washed with the company's product.

Taking a Load Off

Researcher's unweighting device gives patients a new, lighter road to recovery

Only a dozen men ever have experienced the one-sixth gravity of the moon as they walked — more of a hop-skip, really — across the lunar surface and into history. After just a few days in reduced gravity, they came back from their mission literally weak in the knees. But for patients who find themselves in UM Assistant Professor Ryan Mizner's low-gravity environment, the goal isn't to slip the "surlly bonds of Earth" and walk amongst the stars. They simply want to walk again.

In a physical therapy lab brimming with high-tech equipment, Mizner has built a cutting-edge device to provide patients — ranging from those recovering from knee surgeries to those suffering severe brain injuries — with a path to recovery that's surprising in both its simplicity and its efficacy. A series of cords and pulleys, carefully calibrated to provide varying degrees of resistance, eventually wend their way to an unassuming-looking harness, which, once attached to some custom-built compression shorts, can lighten a patient up to 30 percent of their body weight.

The Bodyweight Reduction Instrument to Deliver Graded Exercise (BRIDGE) offers consistent vertical force no matter what the movement. Or, as Mizner says: "What we're doing here is reducing gravity."

Unweighting devices, whether mechanical, pneumatic or otherwise, aren't new. But while other methods of lightening a patient's load are confined to small movements of a patient's core like walking or running on a treadmill, Mizner's device is dynamic in all directions, allowing physical therapists to have patients make lateral and vertical movements that closely mimic the moves

they'll make outside the lab's walls.

"A patient in a fully weighted environment might only be able to make a maximum of 120 repetitions of a jump motion, but when you're able to severely reduce the loads their body is experiencing, you can increase that number and give therapists the opportunity to work with a patient for 350 or 400 repetitions," Mizner says. "And with unrestricted motion those reps can be sport-specific movements like vertical leaps, basketball cutting or volleyball blocks."

Mizner also theorized that being able to make more dynamic movements more times could have value beyond the return of muscle memory and strength.

As a former collegiate athlete himself — he threw hammer and javelin at

Montana State University before heading to the East Coast to earn his master's of physical therapy and doctorate in biomechanics and movement science at the University of Delaware — Mizner saw firsthand how even when athletes have a complete physical recovery from an injury, they still have psychological hurdles to overcome. If jumping, cutting and other high-load movements are what caused an ACL to tear, it can be hard to trust those motions again and return to pre-injury levels of performance.

"In traditional jump retraining, patients will often self-limit loads borne by their repaired knee due to insecurities. Concurrently, clinicians will often limit their practice of those movements due to



UM researcher and inventor Ryan Mizner guides Anna Johnson, a UM freshman in athletic training and veteran of three knee surgeries, in the use of his BRIDGE unweighting system.

BRIDGE — continued next page

Research View

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BRIDGE — continued from page 7

the intense joint loads during practice,” he says. “A novel approach to deliver graded exposure is needed. If we can cut the load and start increasing repetitions, then patients can learn to trust the joint stability.”

That idea earned Mizner a \$40,000 grant from the Foundation for Physical Therapy last year to conduct a double-blind study for 30 patients recovering from ACL reconstruction to test their response to the BRIDGE-based therapy versus the current best practices. Mizner says he anticipates seeing improved rates of people participating in sports with lower risk for secondary injury after a knee surgery. The idea goes beyond ACL reconstruction to patients with other issues, such as chronic pain, who can benefit from carefully managed graded exposure to loading.

The potential benefits of Mizner’s BRIDGE device are such that there’s already talk of how the collection of half a dozen 200-foot elastic cords and repurposed climbing and mountain rescue pulleys can be packaged for use outside of his UM lab and used by physical therapists in their own practices.

That task falls in part to UM Director of Technology Transfer Joe Fanguy, who works with University researchers to help turn their discoveries into marketable, commercialized products and services.

“The University is in the business of research, not necessarily commercializing a product, and so over the past several years we’ve really tried to raise awareness of this option and encourage people to explore it,” Fanguy says. “Ryan has put a



Mizner adjusts the elastic tubes that create the BRIDGE unweighting.

ton of effort into prototyping his system, and as a result we have a much clearer picture about the commercialization potential.”

Fanguy says making the transition from laboratory to a viable business is never easy and requires not only a great idea, but also a mix of individuals with technical and business acumen to form a team that’s up to that task of making and bringing a product to market.

For Mizner, he envisions further refining the prototype to take up a smaller footprint and even structure the

system in a way that it could be mounted out of sight above drop-ceiling panels to avoid taking up valuable real estate on a clinic floor. It’s a far cry from the early models, which were strung up on progressively taller wooden A-frames to test the concept before the current-generation hardware was bolted to the floor and ceiling of the Skaggs Building basement.

And whether BRIDGE evolves into a manufactured product that can be packaged for any forward-thinking physical therapy clinic to purchase and install, or becomes the basis for a service-based offering that could be a destination center for patients from around the region, both Mizner and Fanguy think the future is bright.

“Commercializing these ideas is about more than making money, it’s about the vision of providing job opportunities for the very students these professors are working with,” Fanguy says. “I think there’s enough strength with Ryan’s invention for us to consider the potential for great impacts in western Montana and beyond.” ■

— By Alex Strickland